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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Fifth semester B.Tech degree examinations (S) September 2020

Course Code: ME367

Course Name: NON-DESTRUCTIVE TESTING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks.

Marks

- 1 a) Differentiate between Destructive and Non- Destructive Testing with examples. (5)
b) What are the various applications of NDT? (5)
- 2 a) What are the different visual aids used in visual inspection? Explain fibroscope and boroscope in detail. (5)
b) Explain the working of computer enhanced visual inspection system with a neat diagram. (5)
- 3 a) What are the properties required for a good penetrant used in Liquid Penetrant Inspection (LPI)? Differentiate visual penetrants and fluorescent penetrants. (5)
b) What is the use of developer in Liquid Penetrant Inspection? Explain the different types of developers. (5)
- 4 a) Define the terms dwell time and development time. (2)
b) Explain the various methods of Liquid Penetrant Inspection with flow chart. (8)

PART B

Answer any three full questions, each carries 10 marks.

- 5 a) What is the principle of Magnetic Particle Inspection (MPI)? (2)
b) Explain the following magnetization techniques used in Magnetic Particle Inspection with neat sketches: (i) Head shot technique (ii) Magnetization using prods (iii) Coil shot technique (iv) Central conductor technique. (8)
- 6 a) What are magnetic field indicators? Explain the use of Pie gauge in Magnetic Particle Inspection. (5)
b) List the advantages and disadvantages of Magnetic Particle Inspection. (5)
- 7 a) What are the different modes of wave propagation in Ultrasonic Testing (UT)? (5)

- b) Explain immersion testing technique and dual crystal probe testing technique used in Ultrasonic Testing. (5)
- 8 a) Explain the working of piezoelectric transducer with a neat sketch. Write its advantages and disadvantages. (5)
- b) With a neat sketch, explain how Time of Flight Diffraction (TOFD) can be used to detect cracks in a weldment. (5)

PART C

Answer any four full questions, each carries 10 marks.

- 9 Explain SWSI, DWSI and DWDI inspection techniques in Radiography Testing (RT) of pipes with neat sketches. (10)
- 10 a) Explain how X- Rays can be produced with a neat sketch. (5)
- b) What are the functions of screens in Radiography Testing? Compare metal foil screen and fluorescent salt screen. (5)
- 11 a) Explain the various criteria's used to assess the quality of a good radiograph. (5)
- b) Differentiate between high speed film and low speed film used in Radiography Testing. (5)
- 12 a) Explain the principle of Eddy Current Testing (ECT). List the properties of eddy current. (5)
- b) What is the relation between frequency and depth of penetration in Eddy Current Testing? (5)
- 13 a) Define lift off effect, edge effect and end effect in Eddy Current Testing. (5)
- b) Compare absolute probes and differential probes used in Eddy Current Testing. (5)
- 14 a) Explain the various applications of Eddy Current Testing. (5)
- b) What are the advantages and limitations of Eddy Current Testing? (5)
